Australian Standard®

Concrete structures for retaining liquids—Commentary (Supplement to AS 3735—1991)

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The following interests are represented on Committee CE/22:

The Association of Consulting Engineers, Australia

Australian Post Tensioning Association

Board of Works, Melbourne

Brisbane City Council

Cement and Concrete Association of Australia

Confederation of Australian Industry

Engineering and Water Supply Department, S.A.

Institution of Engineers, Australia

National Precast Concrete Association, Australia

Public Works Department, N.S.W.

University of New South Wales

University of Queensland

Water Authority of Western Australia

Water Board, Sydney—Illawarra—Blue Mountains

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PREFACE

This Supplement was prepared by the Standards Australia Committee on Concrete Structures Retaining Liquids as a commentary to provide background information and explanation on the application of AS 3735, as appropriate.

In the preparation of the Commentary, the Committee referred to the Commentary to NZS 3106–1986, *Code of practice for concrete structures for the storage of liquids* and the assistance gained from this source is acknowledged.

The paragraph numbers of this Commentary are prefixed with the letter C and refer directly to the respective Clause numbers of AS 3735, e.g. Paragraph C5.3.1 refers to Clause 5.3.1. Where there is no commentary to a clause of the Standard, the paragraph number does not appear. Figures and tables are designated C2.2, C3.1, etc., and do not correspond to those in the Standard.

References are listed as the last paragraph of the Section or Appendix in which they occur.

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STANDARDS AUSTRALIA

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SECTION C1 SCOPE AND GENERAL

C1.1 SCOPE A lower concrete strength limit of 20 MPa has been imposed, as strength grades less than this are not considered suitable for structures.

An upper concrete strength limit of 50 MPa has been adopted, because much of the research on which the Standard is based involved concrete strengths at or below this value. Nevertheless, higher strength concretes are being used in Australia and overseas (Refs. C1.7.1 and C1.7.2). The Standard may be applied to such concretes, provided that the physical properties appropriate to them are used in design.

The Standard also limits the use of lightweight aggregate in structural concrete. Most Australian structural concretes employ only lightweight coarse aggregate, resulting in a concrete with a surface- dry density that is seldom less than 1800 kg/m^3.

In the preparation of a Standard such as this, a certain level of knowledge and competence of the majority of users has been assumed. As indicated by the Note to Clause 1.1, it was assumed that the predominant users of this Standard would be professionally qualified civil engineers experienced in the design of concrete structures for retaining liquids, or equally qualified but less experienced persons working under their guidance. It is therefore intended that the Standard be applied and interpreted primarily by such persons.

C1.5 USE OF ALTERNATIVE MATERIALS OR METHODS The designer is usually required to seek approval from the appropriate Authority for the use of alternative materials or methods and such approval would not mean a relaxation of the requirements of the Standard, e.g. the use of fibre-impregnated concrete would not mean an automatic relaxation of the requirements for conventional reinforcement or tendons.

C1.5.3 Ferrocement Ferrocement should comply with the following:

(a) sand/cement ratio, by volume, of not more than 3:1; and

(b) for galvanized and epoxy-coated steel reinforcement, the minimum cover given in Table 4.3 may be reduced by 15 mm provided no negative tolerance is permitted and the surface is hand trowelled.

C1.6 DRAWINGS AND SPECIFICATIONS The information applicable to most concrete members may be shown on only one of the drawings, usually the first sheet.

C1.7 REFERENCES

C1.7.1. CHOY, R.S. *High-strength concrete.* Cement and Concrete Association of Australia. Sydney: 1988. Technical Report TR/F122.

C1.7.2. RUSSELL, H.G. *High-strength concrete in North America.* International symposium on utilization of high-strength concrete. Norway: Stavanger, 1987.